REMARKS

With the present Amendment, claims 1-72 are pending in the present application. The rejection under 35 U.S.C. 101 is respectfully traversed. However, in order to further the prosecution of this application, independent claims 1 and 55 have been amended in order to further satisfy the statutory category requirement of 35 U.S.C. 101. Support for the claim amendments can be found in the specification text and drawings, and in particular, in Figures 3 and 6 and in paragraphs 0025-0026. 0031 and 0050-0053 of US2005/0047490 (published version of the present application). No new matter has been added. Applicant believes that the present application as amended is now in condition for allowance of which prompt and favorable action is respectfully requested.

Additionally, claims 37, 67, 68 and 72 have been amended to cure informalities noticed by the Applicant.

35 U.S. C. 101 Rejection

Claims 1-18 and 55-60 were rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of inventions.

Independent claim 1 has been amended to recite two structures: a signal spreader and a correlator. The two structures are tied to the process recited in claim 1. In particular, the signal spreader generates the chip sequence while the correlator correlates the received signal $r(t)$ with the spreading sequence Si to generate $co_m(t)$ as the correlator output. Thus, as amended, independent claim 1 and its dependent claims 2-18, recite a process that is tied to structures (particular apparatus) in one of the statutory category. As such, the process recited in claims 1-18 falls within of one of the four statutory categories of invention.

Additionally, Applicant respectfully points out that the process recited in independent claim 1 transforms the underlying subject matter to a different state. In brief, the data sequence d_i is inputted into the process recited in claim 1 and exits the process as the output $h(t)$ which represents the channel impulse response. The physical transformation of the data sequence d_i will be evident by physical signs observable (and understood by one skilled in the art) through measuring the data sequence d_i and the channel impulse response $h(t)$ to show that the two have different physical properties (i.e., different states). The transformation of the data sequence d_i takes places with each of the elements recited in claim 1. For example, the data sequence d_i is spread by a spreading sequence S_i to generate a chip sequence c_j. In this step, the data sequence d_i has transformed to the different state of a chip sequence c_j. The chip sequence c_j is then comprised with the received signal $r(t)$. The received signal $r(t)$ is then correlated with the spreading sequence S_i to generate the correlator output $co_m(t)$, further transforming the original inputted data sequence d_i. In the last step recited in claim 1, the correlator output $co_m(t)$ is combined and finally filtered to generate the channel impulse response $h(t)$. Thus, a physical transformation of the data sequence d_i took place through the process recited in claim 1 to output into the physically transformed channel impulse response $h(t)$.

Dependent claims 2-18 each recites the same process as in independent claim 1 through their dependency. And, the explanation above applies to the dependent claims equally.

Independent claim 55 has been amended to recite three structures: a receiver, a correlator and an estimator. The three structures are tied to the process recited in claim 55. In particular, the receiver obtains the received sequence, the correlator correlates the received sequence with a spreading sequence to generate a correlated sequence, and the estimator generates an estimated

communication channel impulse response based on the correlated sequence, a constrained portion, and a code. Thus, as amended, independent claim 55 and its dependent claims 56-60, recite a process that is tied to structures (particular apparatus) in one of the statutory category. As such, the process recited in claims 55-60 falls within of one of the four statutory categories of invention.

Additionally, Applicant respectfully points out that the process recited in independent claim 55 transforms the underlying subject matter to a different state. In brief, the process transforms the input received sequence to a channel impulse response with different physical properties. The physical transformation of the received sequence will be evident by physical signs observable (and understood by one skilled in the art) through measuring the received sequence and the channel impulse response h(t) to show that the two have different physical properties (i.e., different states). The transformation of the received sequence takes places with each of the elements recited in claim 55. For example, the received sequence undergoes a transformation by being correlated with a spreading sequence. The output of the correlator is a "spread received sequence" (labeled as correlated sequence) with different physical properties than the inputted received sequence. Thus, the received sequence is transformed to a different state, a spread received sequence. Following this, the "spread received sequence" (i.e., correlated sequence) is inputted into the estimator to generate a channel impulse response. Additional sequences are added to the spread received sequence, such as the constrained portion of a data sequence and a code, causing further transformation. Thus, the end result of the process recited in claim 55 is the channel impulse response which has different physical properties than the inputted received sequence.

Dependent claims 56-60 each recites the same process as in independent claim 55 through their dependency. And, the explanation above applies to the dependent claims equally.

CONCLUSION

As amended, the rejected claims 1-18 and 55-60 each recite a process tied to structures in another statutory category of invention. Additionally, Applicant also provided explanation to show that the process as recited in claims 1-18 and 55-60 also transform the underlying subject matter to a different state.

Thus, as shown above, Applicant contents that claims 1-18 and 55-60 are directed to statutory subject matter per 35 U.S.C. 101, and withdrawal of the 101 rejection is respectfully requested.

ALLOWABLE SUBJECT MATTER

Applicant thanks the Examiner for indicating that claims 19-54 and 61-72 are allowed.

REQUEST FOR ALLOWANCE

In view of the foregoing, Applicant submits that all pending claims in the application are patentable. Accordingly, reconsideration and allowance of this application are earnestly solicited. Applicant does not believe that any other fees are due regarding this amendment. However, if any fees are required, please charge Deposit Account No. 17-0026. Applicant encourages the Examiner to telephone the Applicant's attorney should any issues remain.

Respectfully submitted,

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